



The emergence of angiostrongyliasis in the People's Republic of China: The interplay between invasive snails, climate change and transmission dynamics

Author(s): Lv S, Zhang Y, Steinmann P, Yang GJ, Yang K, Zhou XN, Utzinger J
Year: 2011
Journal: Freshwater Biology. 56 (4): 717–734

Abstract:

Only few freshwater snail species transmit the rat lungworm *Angiostrongylus cantonensis*, which is partially explained by the low likelihood of contact between snails and infected rat faeces. The snail *Pomacea canaliculata* was introduced into China in 1981 and has become the key intermediate host for *A. cantonensis*. Thus far, the snail has been recorded in 13 provinces of southern China. 2. We developed a biological model and assessed potential impacts of climate change on the distribution of *P. canaliculata* and hence the transmission of *A. cantonensis*. Mean January temperature and snail generation intensity (generation number) were identified as the key factors determining *P. canaliculata* distribution. Our models predict an increase of 56.9% for the 'spread' and a decrease of 40.9% for the 'establishment' regions ('spread' and 'establishment' defined according to a national sampling survey) by the 2030s relative to the present day. 3. Key determinants of *A. cantonensis* transmission were identified as the generation intensity in the intermediate host, the longevity of *A. cantonensis*-infected rats and the dormant period of *P. canaliculata*. Transmission of *A. cantonensis* occurs only in areas where the snail's dormant period is

Source: <http://dx.doi.org/10.1111/j.1365-2427.2011.02579.x>

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES A2

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Geographic Feature:

resource focuses on specific type of geography

Freshwater

Geographic Location:

Climate Change and Human Health Literature Portal

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease (other): Angiostrongylus cantonensis

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type: ☒

format or standard characteristic of resource

Research Article

Timescale: ☒

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content